

Remarks

Claims 1-16 are pending, and claims 1-16 stand rejected. The Applicants traverse the rejection of the Examiner as follows.

Reissue Oath/Declaration

The Examiner has rejected claims 1-16 as being based on a defective reissue oath/declaration. The Applicants respectfully disagree. In the Reissue declaration filed on 7-29-2003, the Applicants state that the “reason for the claim corrections is that the applicant claimed more than entitled to claim in independent claims 1 and 10 as originally issued.” Thus, the Applicants narrowed the claims to correct this error. 37 CFR 1.175(a) provides that:

The reissue oath or declaration in addition to complying with the requirements of § 1.63, must also state that:

(1) The applicant believes the original patent to be wholly or partly inoperative or invalid by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than the patentee had the right to claim in the patent, stating at least one error being relied upon as the basis for reissue; and

(2) All errors being corrected in the reissue application up to the time of filing of the oath or declaration under this paragraph arose without any deceptive intention on the part of the applicant.

The “error” in the previously allowed patent was that the independent claims claimed more than the patentee had the right to claim. The Applicants cannot point to a further error. There were no improper claim limitations, for example. The scope of the original claims just had a breadth that covered more than the Applicants were allowed to cover, which necessitated the amendment to limit the claims. Thus, the reissue declaration as filed properly points to the error which was the basis for the reissue. The Applicants respectfully ask the Examiner to withdraw the rejection on the reissue declaration.

35 USC § 112 Rejection

The Examiner rejected claims 1-5, 8-12, and 15-16 under 35 USC § 112 as failing to comply with the written description requirement. More particularly, the Examiner suggests that the specification as filed does not support the amendments to claims 1 and 10 that recite “data tracks being patterned along the track into first regions...and second regions”. The Applicants

disagree. As the Examiner is aware, the pending patent application was issued as U.S. Patent 6,391,430. The Applicants will refer to the '430 Patent to show where the amendments are supported in the specification.

In the '430 Patent, column 6, lines 42-46, the specification describes that a mask is used to pattern a magnetic recording disk. The mask is formed in a pattern to form concentric circular tracks on the magnetic recording disk, with each track having discrete magnetic regions spaced along it to serve as the individually recordable magnetic bits. The specification is also clear that the recordable magnetic bits are formed from discrete isolated magnetic regions separated from one another by nonmagnetic regions. The magnetic regions comprise the regions that exhibit ferromagnetic coupling across the spacer layer, while the nonmagnetic regions comprise the regions that exhibit antiferromagnetic coupling across the spacer layer. See '430 Patent, column 5, lines 41-52.

Based on at least these sections of the '430 patent, the specification as filed is clear that the first regions (i.e., the nonmagnetic regions) and second regions (i.e., the magnetic regions), as in amended claim 1, are formed along concentric data tracks. Thus, the amendments to claims 1 and 10 are not new matter. The Applicants respectfully ask the Examiner to withdraw this rejection.

35 USC § 102/103 Rejections

The Examiner rejected claims 1, 10, and 15-16 under 35 USC § 102(g) as being anticipated by count 1 of interference 105,110. In the alternative, the Examiner further rejected claims 1, 10, and 15-16 under 35 USC § 103 as being obvious in view of count 1 of interference 105,110 and Toigo. The Applicants disagree with these rejections.

Interference 105,110 involved U.S. Patent 6,391,430 of the Applicants, and U.S. patent application 09/654,487, which was issued as U.S. Patent 6,770,386. The Applicants have reviewed the '386 Patent to identify the "invention" in this patent, which is the same invention involved in count 1 of the interference.

The '386 Patent describes a magnetic recording disk having two ferromagnetic layers separated by a non-ferromagnetic layer, where there is antiferromagnetic coupling between the ferromagnetic layers. See column 3, lines 39-45. Regions of the magnetic recording disk are then heated so that the non-ferromagnetic layer is altered in such a way that the ferromagnetic

layers become ferromagnetically coupled in these regions. See column 4, lines 14-21. In the regions that are not heated, the ferromagnetic layers remain antiferromagnetically coupled.

The magnetic recording disk described in the '386 Patent describes discrete track recording. In typical discrete track recording, a groove of unrecordable space is formed between the tracks on the disk. The grooves act as guard bands to prevent the signal on adjacent tracks from interfering with each other. In the '386 Patent, grooves are not used as guard bands. Instead, the guard bands are formed by the regions where the ferromagnetic layers are antiferromagnetically coupled across the non-ferromagnetic layer. See column 4, lines 30-35. The antiferromagnetic coupling between the ferromagnetic layers creates regions where there is no signal.

Claim 1 of the pending application describes a magnetic recording medium much different than described in the '386 Patent. In claim 1, the magnetic recording medium includes a magnetic layer formed from a first ferromagnetic film and a second ferromagnetic film separated by a nonferromagnetic film. The magnetic layer has a plurality of concentric data tracks, where each of the data tracks is patterned along the track into first regions where the ferromagnetic films are antiferromagnetically coupled, and second regions where the ferromagnetic films are ferromagnetically coupled. This provides a magnetic recording medium that is in effect patterned along the track into the first regions and the second regions.

The magnetic recording medium in claim 1 is much different than the magnetic recording medium in the '386 Patent. In claim 1, the first regions (formed by antiferromagnetic coupling between the ferromagnetic films) and the second regions (formed by ferromagnetic coupling between the ferromagnetic films) are patterned along a track. This creates a patterned media in the down track direction. The '386 Patent describes first regions (formed by antiferromagnetic coupling between the ferromagnetic films) and the second regions (formed by ferromagnetic coupling between the ferromagnetic films) are patterned radially along the disk to form discrete tracks. There is no mention in the '386 Patent of patterning along the tracks in this manner. The tracks in the '386 Patent are continuous meaning that the bits are defined by the magnetic grains in the recording layer. In claim 1, the bits are defined by the second regions where there is ferromagnetic coupling between the ferromagnetic films. Those skilled in the art understand the difference between patterning a magnetic recording medium along a track as in claim 1 and patterning a magnetic recording medium between tracks as in the '386 Patent. Because the '386

Patent does not teach or reasonably suggest patterning the medium along a track, the Applicants submit that claim 1 is novel of the '386 Patent. Claim 10 and the dependent claims are novel for similar reasons.

The Examiner has further cited the Toigo reference in the § 103 rejection. The Toigo reference shows patterning a magnetic recording medium. However, the patterning of the medium in Toigo is much different than the patterning described in claim 1 of the pending application.

One method of patterning a medium is to physically create discrete magnetic islands using e-beam lithography or some other fabrication process. The discrete magnetic islands created according to those processes are physically separated from one another by having material removed to create "mesas and valleys". However, claim 1 of the pending application does not claim physical patterning as described in Toigo. The magnetic recording medium in claim 1 is patterned by altering the nonmagnetic film between the ferromagnetic films so that there are regions of antiferromagnetic coupling between the ferromagnetic layers and regions of ferromagnetic coupling between the ferromagnetic layers. The regions (first regions) having antiferromagnetic coupling between the ferromagnetic layers do not provide a signal, while the regions (second regions) having ferromagnetic coupling between the ferromagnetic layers do provide a signal and represent bits. Because there are separate regions formed along a track due to ferromagnetic coupling in one region and antiferromagnetic coupling in another region, there is no need to physically fabricate discrete mesas separated by valleys as described in Toigo. Thus, the precise fabrication techniques needed in Toigo to pattern the magnetic recording medium are not needed to pattern the magnetic recording medium in claim 1.

To reiterate, the '386 Patent does not teach or suggest patterning a medium along a track. Further, Toigo does not teach or suggest patterning a medium along a track through separate regions of ferromagnetic coupling and antiferromagnetic coupling as recited in claim 1. Thus, the combination of the '386 Patent and Toigo does not teach the magnetic recording medium as recited in claim 1, and claim 1 is nonobvious over this combination. Claim 10 and the dependent claims are non-obvious for similar reasons.

Allowable Subject Matter

The Applicants acknowledge the allowable subject matter identified by the Examiner.

Conclusion

Based on the remarks provided above, the Applicants submit that claims 1-16 are allowable over the cited art. Thus, the Applicants ask the Examiner to reconsider the rejections and allow claims 1-16.

Respectfully submitted,

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/Brett Bornsen/

SIGNATURE OF PRACTITIONER

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